St. Mary River Bridge
Spanning St. Mary River, on Going-to-the-Sun Road
Glacier National Park
Flathead County
Montana

WEST GLACIER

HAER No. MT-84

HAER
MONT,
15-WEGLA,
19-

PHOTOGRAPHS
WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Department of the Interior
Washington, DC 20013-7127

HAER
MONT,
15-WEGLA,
19-

HISTORIC AMERICAN ENGINEERING RECORD

ST. MARY RIVER BRIDGE
HAER MT-84

Location: Spanning St. Mary River, on Coing-to-the-Sun Road, approximately forty-nine miles from the park entrance at West Glacier, Clacier National Park, Glacier County, Montana
UTM: St. Mary Quad. 12/320430/5402250

Date of Construction: 1934-1935

Structural Type: Three-span reinforced concrete arch bridge

Contractor: Lawler Corporation, Butte, Montana

Engineer: Bureau of Public Roads

Owner: Clacier National Park

Use: Vehicular bridge

Significance: The St. Mary River Bridge is one of approximately seventeen prominent masonry and concrete structures on Coing-to-the-Sun Road in Clacier National Park. The 51-mile stretch of scenic road is significant as a unique engineering accomplishment of the early twentieth century, and as the first product of a 1925 cooperative agreement between the National Park Service and the Bureau of Public Roads. Like other structures on the road, the three-span St. Mary River Bridge was constructed using materials native to the park in an effort to make the bridge less obtrusive in the landscape.

Project Information: Documentation of the St. Mary River Bridge is part of the Coing-to-the-Sun Road Recording Project, conducted during the summer of 1990 under the co-sponsorship of HABS/HAER and Glacier National Park. Researched and written by Kathryn Steen, HAER Historian, 1990. Edited and transmitted by Lola Bennett, HAER Historian, 1992.

For measured drawing, see HAER MT-67A, sheet 1.

Going-to-the-Sun Road

The St. Mary River Bridge is a three-span reinforced concrete arch bridge over the St. Mary River on the eastern side of Glacier National Park. The bridge carries the heavy traffic of Going-to-the-Sun Road, a scenic park road that winds through the spectacular mountains and valleys in the middle of Glacier National Park. The 51-mile road, built in sections between 1911 and 1933 and rebuilt for the next two decades, runs east and west through the park. Starting in the west, the road runs from West Glacier, along the 10-mile eastern shore of Lake McDonald and then up McDonald Creek for an additional ten miles. About one mile beyond the junction with Logan Creek, the road begins its ascent to Logan Pass. The road climbs at a 6-percent grade, passes through a tunnel, and turns at a major switchback called "The Loop." The road then follows the contours of the sides of Haystack Butte and Pollock Mountain, passing over several bridges, culverts and retaining walls before reaching Logan Pass. The road descends to the east along the sides of Piegan Mountain and Going-to-the-Sun Mountain before running along the north shore of St. Mary Lake. The road exits the park as it crosses Divide Creek near St. Mary.[1]

Significance of the Road

Going-to-the-Sun Road is significant as an outstanding engineering feat of the early twentieth century. In addition, the road was the first product of the interagency cooperative agreement between the National Park Service (NPS) and the Bureau of Public Roads (BPR). The agreement, signed in 1925, allowed the National Park Service to utilize the roadbuilding expertise of the Bureau of Public Roads while still retaining control to protect the landscape.[2]

St. Mary River Bridge

In July 1933, Glacier National Park celebrated the completion of Going-to-the-Sun Road with a dedication ceremony at Logan Pass. Even as they noted their achievement, however, the NPS and BPR had plans for major reconstruction on the parts of the road built before 1925. About twenty miles on the west end and eight miles on the east end of the road had narrower roadways, tighter curves, and several log culverts and bridges. During the spring of 1934, the park and BPR advertised the contract for the construction of two bridges at the very eastern end of Going-to-the-Sun Road, the St. Mary River Bridge and the Divide Creek Bridge.[3]

In the 1920s, when Glacier Park's appropriations increased, the Stevens Brothers construction firm of St. Paul, Minnesota, erected a one-lane steel truss bridge over the river. The steel bridge was a Parker pony truss bridge, with rivetted joints, and was about 8' high and 70' long.[4]

Glacier Park acquired the steel bridge only one year before the NPS and BPR held their landmark meeting to arrange cooperation on park roads. During the meeting, the National Park Service representatives insisted that all the road contracts contain a clause requiring contractors to utilize construction

materials native to the park. The steel St. Mary River Bridge of 1924 clearly failed to fit the vision of a harmonious blending into nature.[5]

In 1930, the National Park Service's Chief Landscape Architect, Thomas Vint, suggested that the alignment of the road near St. Mary needed improvement. At that time, a visiting motorist turned off Blackfeet Highway (Highway 89) on to St. Mary Chalet's spur road, and then to Coing-to-the-Sun Road. Vint felt there should be a primary junction between the Going-to-the-Sun Road and Blackfeet Highway that bypassed the chalets.[6]

The dual problems of the incongruous steel bridge and the poorly aligned road were solved in 1934. As part of the reconstruction, the NPS and BPR advertised a contract for the road realignment, a new St. Mary River Bridge, and a new bridge over Divide Creek on the park's eastern boundary. The Lawler Corporation of Butte, Montana, submitted the low bid of $94,695 on May 23, 1934.[7]

Lawler began work July 12 by setting up his camp near the bridge. The camp, able to accommodate sixty laborers, included a cook house, three bunkhouses, an office, a tool house, and a gasoline pump. The contractor also built a blacksmith shed and warehouse, and stockpiled sand, gravel, and stone in the vicinity of the bridge. Lawler gathered his sand and gravel from the riverbed and constructed a washing plant one-half mile downstream from the bridge. Lawler quarried his rock from the side of Coing-to-the-Sun Road about seven miles west of Blackfeet Highway and also near Piegan Creek. As part of New Deal government relief efforts during the Depression, the park and BPR required Lawler to hire his labor through the National Reemployment Service. Each laborer could work no more than forty hours per week and many worked less. The contractor needed to pay a minimum wage of $.75 per hour to skilled labor and $.60 to unskilled.[8]

Construction on the bridge began in late July with the excavation of the bridge footings. The contractor built wooden cofferdams at the two abutments and sank wooden cribs for the two piers. After Lawler pumped the water out of the cofferdams and cribs, he used a crane with a clam shell bucket to excavate prior to pouring the footings. Lawler poured the top portions of the abutments and piers in sections as progress with the rest of the bridge warranted.[9]

As the contractor finished up the footings late in the summer, he began to drive timber piles to support the extensive falsework for the concrete spans. Lawler built the falsework in several layers. On top of the piles, Lawler laid a horizontal framework of caps and bents, and then in the spring of 1935, placed a series of longitudinal stringers on the framework. Lawler formed the arch by attaching to the top edges of the stringers pieces of timber that had been appropriately cut in a curve. Then, perpendicular to the stringers and their arched attachments, the contractor laid planks that overlapped with rabbetted joints to form a floor. On top of the first layer, Lawler placed a second layer of planks, laid parallel to the stringers.[10]

After the falwework was in place, Lawler proceeded with laying the masonry ringstones on the upstream and downstream edges of the timber frame. As the ring stones were erected in early June, the contractor also placed the ⅝" steel reinforcing rod. Lawler created the concrete slab floor, which required 400 cubic yards of concrete, by pouring the entire amount in one 17½-

hour interval on June 16. Through the rest of the summer, Lawler completed the railings, curb stones, and surfacing. Lawler fininshed the bridge, including removing the old bridge and approaches, on September 4, 1935 for a cost of $60,454.10.[11]

Description

The St. Mary River Bridge is a three-span reinforced concrete arch bridge. At the bridge site, the river is flowing out of St. Mary Lake to the northeast toward Lower St. Mary Lake and the Hudson Bay. The middle span is 52½' long and the two side spans are 43' long. The roadway crosses over the river at a 14-degree angle. The piers and abutments are parallel to the flow of the water, and on the upstream side of the bridge, the piers are equipped with masonry nose cones to deflect the water and debris floating down the river. The masonry is a mix of buff limestone, with individual green stones spread randomly throughout the walls, piers, and abutments. The roadway includes a masonry curb that forms a small sidewalk on the upstream side of the bridge.[12]

ENDNOTES

1. See the Historic American Engineering Record report HAER MT-67 on the Going-to-the-Sun Road.

2. C.H. Purcell, F.A. Kittredge, J.A. Elliott, T.C. Vint, and C.J. Kraebel, Suggested Procedure for Cooperation Between the National Park Service and the Bureau of Public Roads in Major Traffic-Way Projects Within the National Parks, April 22, 1925 (Record Group 79, National Archives, Washington, D.C.)

3. John Zoss, "Final Construction Report (1934-1935) on St. Mary's River and Divide Creek Bridges With Approaches, Clacier National Park, Project 1-E2" (Glacier National Park Library Historical File).

4. Monthly Superintendent Reports, September 1923, December 1923, and March 1924 (Clacier National Park Library Historical File); Photographs #348-350 (Glacier National Park Historic Photograph Collection).

5. Purcell, et. al., Suggested Procedure.

6. Thomas Vint to L.I. Hewes, Deputy Chief Engineer, Bureau of Public Roads, July 22, 1930 (Record Group 79, National Archives, Washington, D.C.)

7. Zoss, "Final Construction Report."

8. J. Haslett Bell, NPS Assistant Landscape Architect, "Report to the Chief Architect Through the Superintendent of Glacier National Park," November 1934 (Clacier National Park Library Historical File); Zoss, "Final Construction Report."

9. Zoss, "Final Construction Report."

10. Zoss, "Final Construction Report."

11. Zoss, "Final Construction Report."

12. Zoss, "Final Construction Report."

BIBLIOGRAPHY

Bell, J. Haslett. "Report to the Chief Architect Through the Superintendent of Glacier National Park." November 1934 (Clacier National Park Library Historical File).

Historic American Engineering Record. "HAER MT-67: Going-to-the-Sun Road." (Library of Congress, Washington, D.C.)

"Monthly Superintendent's Report," September 1923, December 1923, and March 1924 (Glacier National Park Historical File).

Purcell, C.H., F.A. Kittredge, J.A. Elliott, T.C. Vint, and C.J. Kraebel. Suggested Procedure for Cooperation Between the National Park Service and the Bureau of Public Roads in Major Traffic-Way Projects Within the National Parks. April 22, 1925 (Record Group 79, National Archives, Washington, D.C.)

Saint Mary River Bridge (1924). Photographs #348-350 (Clacier National Park Historic Photograph Collection).

Vint, Thomas, NPS Landscape Architect. Letter to L.I. Hewes, BPR Deputy Chief Engineer. July 22, 1930 (Record Group 79, National Archives, Washington D.C.)

Zoss, John. "Final Construction Report (1934-1935) on St. Mary's River and Divide Creek Bridges With Approaches, Glacier National Park, Project 1-E2" (Clacier National Park Library Historical File).